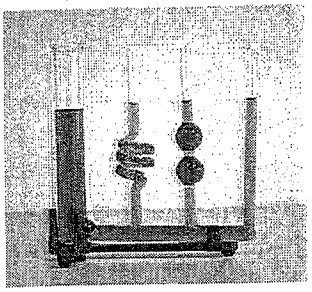
Name: _____ Date: _____ Hour: _____

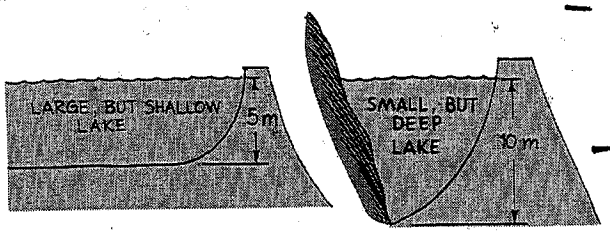
Archimedes' Principle, Pascal's Principle, and Fluid Pressure Notes

Assuming the vases below are filled to the same level, which vase experiences the greatest pressure? Fluid pressure depends upon what?



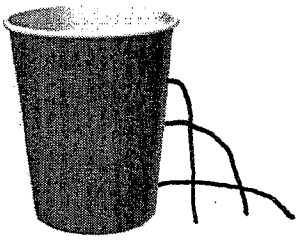
- THE PRESSURE IS THE SAME IN ALL VASES B/C THE DEPTH IS THE SAME.
- FLUID PRESSURE DEPENDS UPON DEPTH!

Why are dams built thicker at the bottom? Which dam experiences a greater pressure? How do you know?



- DAMS ARE THICKER AT THE BOTTOM B/C PRESSURE IS GREATER THE DEEPER YOU GO.
- THE DAM DEEPER DOWN (DEEP LAKE) HAS THE GREATEST PRESSURE.
- PRESSURE INCREASES WITH DEPTH.

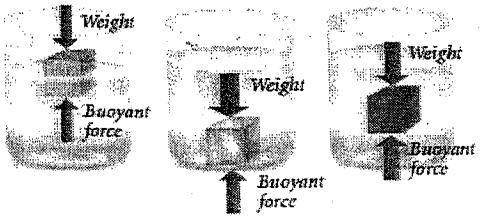
Assume the cup below has water in it and three holes are poked at different levels in the side. How will the water stream out differently from each hole? Why does this happen?



- DEEPER DOWN = GREATER PRESSURE = GREATER FORCE ON THE FLUID SO IT FLIES OUT FARTHER.

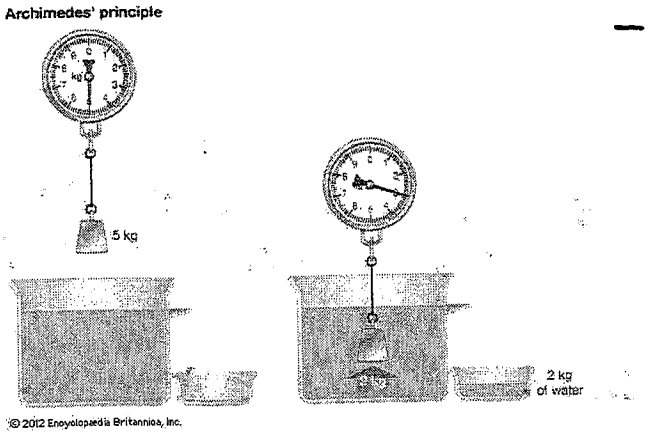
In the image below, what direction is the buoyant force? So buoyancy is AN UPWARD FORCE
Objects with greater buoyant force than gravity FLOAT. Objects with a smaller buoyant force than gravity SINK.

Buoyancy



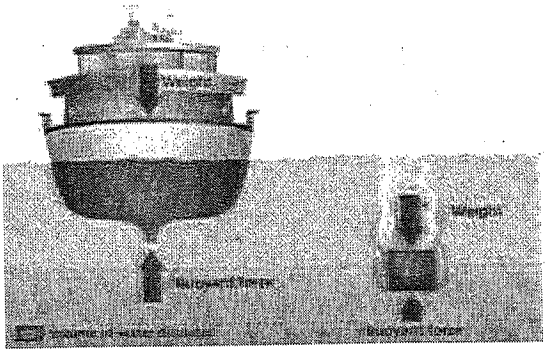
- BUOYANCY IS ↑

In your own words, what is Archimedes' Principle? This means objects in water feel (lighter, heavier, or the same) as they do out of water?



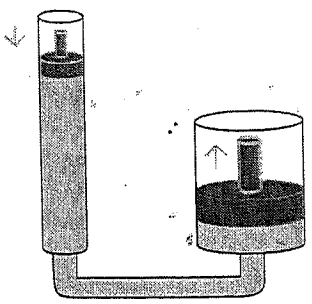
- THE BUOYANT FORCE (↑) THAT IS EXERTED ON AN OBJECT = THE WEIGHT OF THE FLUID THAT IS DISPLACED.

How can objects that are extremely dense still float in water?



- IT DEPENDS UPON THEIR SHAPE. IF THEY ARE ABLE TO DISPLACE MORE WATER THAN THEIR WEIGHT, THEY WILL FLOAT, OTHERWISE THEY SINK.

What do you notice about the hydraulic system below? Pascal's Principle states that when there is an increase in fluid pressure at any point in a confined fluid, there is an equal increase at every other point in the container. How is this beneficial for people? Can you think of real life examples of Pascal's Principle at work? What would be the tradeoff between the two pistons shown?



- A SMALL PISTON/CYLINDER + A LARGE PISTON/CYLINDER.
- IT ALLOWS US TO LIFT HEAVY OBJECTS IN A VARIETY OF WAYS: EVEN GET TOOTHPASTE OUT OF A TUBE.
- GARBAGE TRUCKS / TRASH COMPACTORS / CARNIVAL RIDES / HYDRAULIC LIFTS / CAR JACKS / CONSTRUCTION EQUIPMENT / ETC
- SMALL PISTON REQUIRES LITTLE FORCE BUT OVER A LONGER DISTANCE, LARGE PISTON PUTS OUT A LARGE FORCE OVER A SHORT DISTANCE